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NABL - Accredited Laboratory as per ISO / IEC-17025 :2005

T-2377

Job No.: CTCE/BBMP/W.No.06/KRSK/CSR-5/051g/CEMENT/2016-17 Date: 30.05.2016

TEST REPORT ON CEMENT

* CUSTOMER	:	**Asst. Executive Engineer**, Byatarayanapura Sub Division, BBMP, Bangalore.
*AGENCY	:	**Mr. K.R. Santosh Kumar,** #04, 1st A Main, V. Pura, AVR Block, Virupakshapura, Vidyaranyapura (P), Bangalore.
*NAME OF THE WORK	:	Improvements to Roads and Drains at Bhuvaneshwarinagar in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
*REFERENCE	:	EE/BTP/BBMP/E-PMT/03/2016-17 Dated: 21.04.2016
SAMPLE ID	:	Cement
SAMPLE RECEIVED ON	:	28.05.2016
PERIOD OF TESTING	:	28.05.2016 to 30.05.2016

The results of the tests conducted on the cement sample are as follows:

Sl. No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-2013
1	Standard Consistency	IS-4031 (Part -4) 1988(RA-2009)	30.00 %	-
2	a) Initial Setting Time	IS-4031 (Part -5) 1988(RA-2009)	150 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5) 1988(RA-2009)	480 Minutes	Not More than 600 Minutes
3	Soundness by Le Chartlier Method	IS-4031 (Part-3) 1988(RA-2009)	1 mm	Not more than 10mm

*Information is furnished by the Customer/Representative.

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AE-06 n/a 30/5

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VISHWANATH. I.A.
Chief Executive Officer

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagar, Bangalore-79.
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Job No.: CTCE/BBMP/W.No.06/KRSK/CSR-5/051g/SAND-Gradation/2016-17 : 30.05.2016

TEST REPORT ON DETERMINATION GRADATION OF FINE AGGREGATES

*** Customer** : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

*** Agency** : **Mr. K.R. Santosh Kumar,**
#04, 1st A Main, V. Pura, AVR Block, Virupakshapura, Vidyaranyapura (P), Bangalore.

*** Name of Work** : Improvements to Roads and Drains at Bhuvaneshwarinagar in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-PMT/03/2016-17 Dated: 21.04.2016

Technical Reference : IS : 2386 Part 1 - 1963 RA-2007

Sample ID : Fine Aggregates

Sample Received on : 28.05.2016

Date of Testing : 30.05.2016

Total Wt. of Aggregates in gms **1000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2007)			
		Zone-I	Zone-II	Zone-III	Zone-IV
10	100	100	100	100	100
4.75	93.70	90-100	90-100	90-100	95-100
2.36	75.00	60-95	75-100	85-100	95-100
1.18	52.70	30-70	55-90	75-100	90-100
600 Micron	24.00	15-34	35-59	60-79	80-100
300 Micron	13.00	5-20	8-30	12-40	15-50
150 Micron	6.00	0-10	0-10	0-10	0-15

* Information is furnished by the Customer/Representative

Remarks : This sample is under Zone-I specific limits.

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Job No.: CTCE/BBMP/W.No.06/KRSK/CSR-5/051g/AGG/GR/2016-17 : 30.05.2016

TEST REPORT ON DETERMINATION GRADATION OF COARSE AGGREGATES

* Customer	: **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
* Agency	: **Mr. K.R. Santosh Kumar,** #04, 1st A Main, V. Pura, AVR Block, Virupakshapura, Vidyaranyapura (P), Bangalore.
* Name of Work	: Improvements to Roads and Drains at Bhuvaneshwarinagar in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	: EE/BTP/BBMP/E-PMT/03/2016-17 Dated: 21.04.2016
Technical Reference	: IS : 2386 Part 1 -1963 RA-2007
Sample ID	: Coarse Aggregates (40mm)
Sample Received on	: 28.05.2016
Date of Testing	: 30.05.2016

Total Wt. of Aggregates in gms= **7000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2007)	
		Graded	Single Sized
80	100	100	-
63	100	-	100
40	97.14	95-100	85-100
20	47.14	30-70	0-20
10	20.71	10-35	0-5
4.75	3.57	0-5	-

* Information is furnished by the Customer/Representative

Remarks : This sample is under Graded specific limits.

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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.06/KRSK/STEEL/2016-17 30.05.2016

TEST REPORT ON REINFORCEMENT STEEL

Customer : **Asst. Executive Engineer**, Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Mr. K.R. Santosh Kumar,** #04, 1st A Main, V. Pura, AVR Block, Virupakshapura, Vidyaranyapura (P), Bangalore.

Name of the Work : Improvements to Roads and Drains at Bhuvaneshwarinagar in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-PMT/03/2016-17 Dated: 21.04.2016

Date of Test : 30.05.2016

Technical Reference : IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm^2	Tensile strength (Ultimate stress) N/mm^2	Elongation percent gauge length		
1	12	0.89	515	558	13.35	O.K	O.K

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T-2377

Job No.: CTCE/BBMP/W.No.06/KRSK/CSR-5/051g/CUBE/2016-17 06.07.2016

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

*** Customer** : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

*** Agency** : **Mr. K.R. Santosh Kumar,**
#04, 1st A Main, V. Pura, AVR Block, Virupakshapura, Vidyaranyapura (P), Bangalore.

*** Name of the work** : Improvements to Road and Drains at Bhuvaneshwarinagar in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.

*** Reference** : EE/BTP/BBMP/E-PMT/03/2016-17 Dated: 21.04.2016

*** Sample ID** : Cement Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

*** Grade of Concrete** : M_{15}

Compressive Strength as on : 28th day

Sample Received on : 06.07.2016

Sl.No.	* Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	08.06.2016	06.07.2016	8.119	362.3	16.10
2	08.06.2016	06.07.2016	8.239	375.9	16.71
3	08.06.2016	06.07.2016	8.335	393.6	17.49

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Job No.: CTCE/BBMP/W.No.06/KRSK/CSR-5/051g/CUBE/2016-17 08.07.2016

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	: **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
* Agency	: **Mr. K.R. Santosh Kumar,** #04, 1st A Main, V. Pura, AVR Block, Virupakshapura, Vidyaranyapura (P), Bangalore.
* Name of the work	: Improvements to Road and Drains at Bhuvaneshwarinagar in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
* Reference	: EE/BTP/BBMP/E-PMT/03/2016-17 Dated: 21.04.2016
* Sample ID	: Drain Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
* Grade of Concrete	: M_{20}
Compressive Strength as on	: 28th day
Sample Received on	: 08.07.2016

Sl.No.	* Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	10.06.2016	08.07.2016	8.115	478.5	21.27
2	10.06.2016	08.07.2016	8.237	493.6	21.94
3	10.06.2016	08.07.2016	8.310	510.9	22.71

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Job No.: CTCE/BBMP/W.No.06/KRSK/CSR-5/051g/CUBE/2016-17 08.07.2016

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* **Customer** : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

* **Agency** : **Mr. K.R. Santosh Kumar,** #04, 1st A Main, V. Pura, AVR Block, Virupakshapura, Vidyaranyapura (P), Bangalore.

* **Name of the work** : Improvements to Road and Drains at Bhuvaneshwarinagar in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.

* **Reference** : EE/BTP/BBMP/E-PMT/03/2016-17 Dated: 21.04.2016

* **Sample ID** : Drain Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

* **Grade of Concrete** : M_{20}

Compressive Strength as on : 28th day

Sample Received on : 08.07.2016

Sl.No.	* Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	10.06.2016	08.07.2016	8.287	485.5	21.58
2	10.06.2016	08.07.2016	8.319	495.6	22.03
3	10.06.2016	08.07.2016	8.425	513.6	22.83

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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.06/KRSK/WMM/Gradation/2016-17 01.06.2016

GRADATION FOR WMM
MORTH TABLE-400-11

Customer : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Mr. K.R. Santosh Kumar,**
#04, 1st A Main, V. Pura, AVR Block, Virupakshapura, Vidyaranyapura (P), Bangalore.

Name of Work : Improvements to Road and Drains at Bhuvaneshwarinagar in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-PMT/03/2016-17 Dated: 21.04.2016

Date of Testing : 01.06.2016

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **7545**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	125	125	1.7	98.3	95-100
22.4	2540	2665	35.3	64.7	60-80
11.2	1350	4015	53.2	46.8	40-60
4.75	995	5010	66.4	33.6	25-40
2.36	890	5900	78.2	21.8	15-30
0.600	680	6580	87.2	12.8	8-22
0.075	600	7180	95.2	4.8	0-8

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Job No.: CTCE/BBMP/W.No.06/KRSK/WMM/Gradation/2016-17 03.06.2016

GRADATION FOR WMM
MORTH TABLE-400-11

Customer : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Mr. K.R. Santosh Kumar,**
#04, 1st A Main, V. Pura, AVR Block, Virupakshapura, Vidyaranyapura (P), Bangalore.

Name of Work : Improvements to Road and Drains at Bhuvaneshwarinagar in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-PMT/03/2016-17 Dated: 21.04.2016

Date of Testing : 03.06.2016

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **7930**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	185	185	2.3	97.7	95-100
22.4	2450	2635	33.2	66.8	60-80
11.2	1410	4045	51.0	49.0	40-60
4.75	1020	5065	63.9	36.1	25-40
2.36	920	5985	75.5	24.5	15-30
0.600	890	6875	86.7	13.3	8-22
0.075	800	7675	96.8	3.2	0-8

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Job No.: CTCE/BBMP/W.No.06/KRSK/WMM/Gradation/2016-17 04.06.2016

GRADATION FOR WMM
MORTH TABLE-400-11

Customer : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Mr. K.R. Santosh Kumar,**
#04, 1st A Main, V. Pura, AVR Block, Virupakshapura, Vidyaranyapura (P), Bangalore.

Name of Work : Improvements to Road and Drains at Bhuvaneshwarinagar in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-PMT/03/2016-17 Dated: 21.04.2016

Date of Testing : 04.06.2016

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **8135**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	160	160	2.0	98.0	95-100
22.4	2600	2760	33.9	66.1	60-80
11.2	1385	4145	51.0	49.0	40-60
4.75	1050	5195	63.9	36.1	25-40
2.36	990	6185	76.0	24.0	15-30
0.600	850	7035	86.5	13.5	8-22
0.075	680	7715	94.8	5.2	0-8

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Job No.: CTCE/BBMP/W.No.06/KRSK/WMM/Gradation/2016-17 13.06.2016

GRADATION FOR WMM
MORTH TABLE-400-11

Customer : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Mr. K.R. Santosh Kumar,**
#04, 1st A Main, V. Pura, AVR Block, Virupakshapura, Vidyaranyapura (P), Bangalore.

Name of Work : Improvements to Road and Drains at Bhuvaneshwarinagar in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-PMT/03/2016-17 Dated: 21.04.2016

Date of Testing : 13.06.2016

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **8235**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	130	130	1.6	98.4	95-100
22.4	2450	2580	31.3	68.7	60-80
11.2	1285	3865	46.9	53.1	40-60
4.75	1085	4950	60.1	39.9	25-40
2.36	1005	5955	72.3	27.7	15-30
0.600	910	6865	83.4	16.6	8-22
0.075	890	7755	94.2	5.8	0-8

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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.06/KRSK/WMM/Gradation/2016-17 14.06.2016

GRADATION FOR WMM
MORTH TABLE-400-11

Customer : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Mr. K.R. Santosh Kumar,**
#04, 1st A Main, V. Pura, AVR Block, Virupakshapura, Vidyaranyapura (P), Bangalore.

Name of Work : Improvements to Road and Drains at Bhuvaneshwarinagar in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-PMT/03/2016-17 Dated: 21.04.2016

Date of Testing : 14.06.2016

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **8005**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	155	155	1.9	98.1	95-100
22.4	2550	2705	33.8	66.2	60-80
11.2	1210	3915	48.9	51.1	40-60
4.75	970	4885	61.0	39.0	25-40
2.36	925	5810	72.6	27.4	15-30
0.600	990	6800	84.9	15.1	8-22
0.075	855	7655	95.6	4.4	0-8

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Job No.: CTCE/BBMP/W.No.06/KRSK/WMM/AIV/2016-17 01.06.2016

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Mr. K.R. Santosh Kumar,** #04, 1st A Main, V. Pura, AVR Block, Virupakshapura, Vidyaranyapura (P), Bangalore.
Name of the Work	Improvements to Roads and Drains at Bhuvaneshwarinagar in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/03/2016-17 Dated: 21.04.2016
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	01.06.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	379	382	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	78	79	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	303	
4	Aggregate Impact value = percent fines	20.58	20.68	
	100* (W_2/W_1)%			**21.00**

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

Note:

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Job No.: CTCE/BBMP/W.No.06/KRSK/WMM/S-T/2016-17 01.06.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Mr. K.R. Santosh Kumar,** #04, 1st A Main, V. Pura, AVR Block, Virupakshapura, Vidyaranyapura (P), Bangalore.
Name of Work	Improvements to Roads and Drains at Bhuvaneshwarinagar in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/03/2016-17 Dated: 21.04.2016
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	01.06.2016

Result : Flakiness Index = **11.25%**

Elongation Index = **13.39%**

Result : Combined Flakiness & Elongation index **24.64%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.06/KRSK/SDBC/AIV/2016-17 04.07.2016

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Mr. K.R. Santosh Kumar,** #04, 1st A Main, V. Pura, AVR Block, Virupakshapura, Vidyaranyapura (P), Bangalore.
Name of the Work	Improvements to Roads and Drains at Bhuvaneshwarinagar in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/03/2016-17 Dated: 21.04.2016
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	04.07.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	389	390	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	80	82	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	309	308	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	20.57	21.03	20.80

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

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Job No.: CTCE/BBMP/W.No.06/KRSK/SDBC/Shape_T/2016-17 : 04.07.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	: **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	: **Mr. K.R. Santosh Kumar,** #04, 1st A Main, V. Pura, AVR Block, Virupakshapura, Vidyaranyapura (P), Bangalore.
Name of Work	: Improvements to Roads and Drains at Bhuvaneshwarinagar in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	: EE/BTP/BBMP/E-PMT/03/2016-17 Dated: 21.04.2016
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Semi Dense Bituminous Concrete
Date of Testing	: 04.07.2016

Result : Flakiness Index = **12.32%**

Elongation Index = **13.26%**

Result : Combined Flakiness & Elongation index **25.58%**

Comments:

Maximum allowable Flakiness & Elongation Index for Semi Dense Bituminous Concrete is 30%

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Job No.: CTCE/BBMP/W.No.06/KRSK/SDBC/Stripping/2016-17 04.07.2016

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Customer	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Mr. K.R. Santosh Kumar,** #04, 1st A Main, V. Pura, AVR Block, Virupakshapura, Vidyaranyapura (P), Bangalore.
Name of the work	Improvements to Roads and Drains at Bhuvaneshwarinagar in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/03/2016-17 Dated: 21.04.2016
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	04.07.2016

Type of binder : 60/70
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.0 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.4	3.50	96.50
2	3.5		
3	3.6		

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Comments:

→ Minimum allowable Aggregate retained coating for Semi Dense Bituminous Concrete is 95%

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Job No.: CTCE/BBMP/W.No.06/KRSK/SDBC/Sp_Wa/2016-17 04.07.2016

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Customer	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Mr. K.R. Santosh Kumar,** #04, 1st A Main, V. Pura, AVR Block, Virupakshapura, Vidyaranyapura (P), Bangalore.
Name of the Work	Improvements to Roads and Drains at Bhuvaneshwarinagar in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/03/2016-17 Dated: 21.04.2016
Type of Mix	Semi Dense Bituminous Concrete
Source / Location	Hotmix Plant, Bangalore
Date of Testing	04.07.2016

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2008	2009	2013	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1253	1254	1258	
4	Weight of saturated surface dry aggregate in air	W_3 g	2023	2025	2022	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	770	771	764	
6	Weight of oven dried aggregate	W_4 g	2013	2011	2010	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.614	2.608	2.631	2.618
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.649	2.657	2.673	2.659
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.50%	0.70%	0.60%	0.60%

Comments:

→ Maximum allowable Aggregate Water absorption value for Semi Dense Bituminous Concrete is 2.0

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Job No.: CTCE/BBMP/W.No.06/KRSK/SDBC/Bitumen/2016-17 04.07.2016

BITUMEN CONTENT AND GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

As per IS2386 and IRC:SP:11-1984

CUSTOMER	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
AGENCY	**Mr. K.R. Santosh Kumar,** #04, 1st A Main, V. Pura, AVR Block, Virupakshapura, Vidyaranyapura (P), Bangalore.
NAME OF THE WORK	Improvements to Roads and Drains at Bhuvaneshwarinagar in Ward No.06, Byatarayanapura Sub Division, BBMP, Bangalore.
REFERENCE	EE/BTP/BBMP/E-PMT/03/2016-17 Dated: 21.04.2016
SAMPLE I/D	Roads in Bhuvaneshwarinagar in Ward No.06
DATE OF TESTING	04.07.2016

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	475	474
3. Weight of Asphalt and Mineral matter Extracted,	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	25	26.00
7. Bitumen content in %	5.00	5.20
8. Average	**5.10**	

GRADATION AFTER EXTRACTION

SIEVE SIZE	Trail 1				JOBMIX
mm	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	Gradation
13.2	0	0	0	100	100
9.5	33.13	6.97	6.97	93.03	90-100
4.75	262.3	55.22	62.20	37.80	35-51
2.36	38.15	8.03	70.23	29.77	24-39
1.18	44.12	9.29	79.52	20.48	15-30
0.3	40.21	8.47	87.98	12.02	9-19
0.075	28.56	6.01	93.99	6.01	3-8

SIEVE SIZE	Trail 2				JOBMIX
mm	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	Gradation
13.2	0	0	0	100	100
9.5	32.26	6.45	6.45	93.55	90-100
4.75	260.5	52.10	58.55	41.45	35-51
2.36	55.45	11.09	69.64	30.36	24-39
1.18	48.25	9.65	79.29	20.71	15-30
0.3	35.15	7.03	86.32	13.68	9-19
0.075	41.23	8.25	94.57	5.43	3-8

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